CLAIMS

1. A method of preparing a biocide, comprising the steps of:

(a) preparing stabilized alkali or alkaline earth metal hypochlorite having a pH at least 11 by mixing a chlorine oxidant including alkali or alkaline earth metal hypochlorite with a stabilizer selected from the group consisting of acid amide derivatives of carbonic acids, carboxylic acids, amino acids, and sulfuric acids in an alkali solution;

(b) preparing a bromide ion source; and

(c) adding the bromide ion source prepared in step (b) into the stabilized alkali or alkaline earth metal hypochlorite prepared in step (a).

2. The method as set forth in claim 1, wherein the method further comprises the steps of:

(d) lowering the pH of the mixture prepared in step (c) to at least 5; and

(e) raising the pH up to at least 13 by adding an alkali solution.

3. The method as set forth in claim 1, wherein the stabilizer is selected from the group consisting of urea, thiourea, creatinine, cyanuric acid, mono or di-ethanolamine, organic sulfonamide, biuret, sulfamic acid, organic sulfamate, melamine, and mixtures thereof.

4. The method as set forth in claim 1, wherein the chlorine oxidant is selected from the group consisting of alkali or alkaline earth metal hypochlorite, chlorinated isocyanurate, chlorinated hydantoion, chlorinated melamine, chlorinated glycoluryl, chlorinated glutaric imide, chlorine, and mixtures thereof.

5. The method as set forth in claim 4, wherein the alkali or alkaline earth metal hypochlorite is selected from the group consisting of sodium hypochlorite, potassium hypochlorite, lithium hypochlorite, magnesium hypochlorite, calcium hypochlorite, and mixtures thereof.

6. The method as set forth in claim 1, wherein the bromide ion source is selected from the group consisting of sodium bromide, calcium bromide, potassium bromide, chlorine bromide, bromine, and mixtures thereof.

7. The method as set forth in any of claims 1 to 6, wherein the stabilizer is sulfamic acid, the chlorine oxidant is sodium hypochlorite, and the bromide ion source is sodium bromide.

8. The method as set forth in claim 1, wherein the stabilizer and the chlorine oxidant is mixed in a molar ratio of 9:1 to 1:9.

9. The method as set forth in claim 8, wherein the stabilizer and the chlorine oxidant is mixed in a molar ratio

of 1:1.

10. The method as set forth in claim 1, wherein the stabilized hypochlorite and the bromide ion source is mixed in a molar ratio of 1:10 to 50:1.

11. The method as set forth in claim 10, wherein the stabilized hypochlorite and the bromide ion source is mixed in a molar ratio of 1:1 to 20:1.

12. The method as set forth in claim 1, wherein the stabilized alkali or alkaline earth metal hypochlorite is under an environment of a pH at least 13.

13. The method as set forth in claim 2, wherein the pH of the mixture prepared in the step (c) of the claim 1 is lowered to 8 by adding an acidic solution.

14. A method of controlling the growth of microorganisms in a water system requiring disinfection using a biocide prepared by the method of claim 1, wherein said biocide is added to 0.1 to 10 ppm total halogen residual.

15. The method as set forth in claim 14, wherein the biocide is added to 0.2 to 5 ppm total halogen residual.

16. The method as set forth in claim 14, wherein the water system is selected from the group consisting of swimming pools, hot springs, ponds, water slides, and

industrial water systems, such as cooling towers of buildings or plants, paper-making processes, wastewater recycling systems, gas scrubber systems, freshwater systems, or air washer systems.

17. A method of controlling the growth of microorganisms in a water system requiring disinfection using a biocide prepared by the method of claim 2, wherein said biocide is added to 0.1 to 10 ppm total halogen residual.

18. The method as set forth in claim 17, wherein the biocide is added to 0.2 to 5 ppm total halogen residual.

19. The method as set forth in claim 17, wherein the water system is selected from the group consisting of swimming pools, hot springs, ponds, water slides, and industrial water systems, such as cooling towers of buildings or plants, paper-making processes, wastewater recycling systems, gas scrubber systems, freshwater systems, or air washer systems.

20. A method of controlling the growth of microorganisms, comprising the steps of:

(a) preparing stabilized alkali or alkaline earth metal hypochlorite having a pH at least 11 by mixing a chlorine oxidant including alkali or alkaline earth metal hypochlorite with a stabilizer selected from the group consisting of acid amide derivatives of carbonic acids, carboxylic acids, amino acids, and sulfuric

acids in an alkali solution;

(b) preparing a bromide ion source; and

(c) sequentially or simultaneously introducing the stabilized alkali or alkaline earth metal hypochlorite prepared in step (a) and the bromide ion source prepared in step (b) into a habitat of microorganisms up to 0.1 to 10 ppm total halogen residual.

21. The method as set forth in claim 20, wherein the stabilized hypochlorite and the bromide ion source is added to a habitat of microorganisms up to 0.1 to 10 ppm total halogen residual.

22. The method as set forth in claim 21, wherein the stabilized hypochlorite and the bromide ion source is added to a habitat of microorganisms to 0.2 to 5 ppm total halogen residual.

23. The method as set forth in any of claims 20 to 22, wherein the water system is selected from the group consisting of swimming pools, hot springs, ponds, water slides, and industrial water systems, such as cooling towers of buildings or plants, paper-making processes, wastewater recycling systems, gas scrubber systems, freshwater systems, or air washer systems.